



Best Available Copy

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667.633	09/22/2003	Christopher Cave	I-2-0390.1US	1103
24374	7590	01/30/2008	EXAMINER	
VOLPE AND KOENIG, P.C.			LAM, DUNG LE	
DEPT. ICC			ART UNIT	PAPER NUMBER
UNITED PLAZA, SUITE 1600			2617	
30 SOUTH 17TH STREET			MAIL DATE	DELIVERY MODE
PHILADELPHIA, PA 19103			01/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/667,633	CAVE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Dung Lam	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10/19/06.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 45-88 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-88 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **45, 59, 66, 67** rejected under 35 U.S.C. 103(a) as being unpatentable by **Watanabe et al.** (US Patent No. 6834192) in view of **Jollota** (US 2004/0142691).

1. Regarding claim **45**, **Watanabe** teaches a in a radio network having a plurality of base stations, each providing wireless communication services for mobile units in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations, and an interface connected to the base stations, a method of handoff a wireless communication with a mobile unit conducted via a first base station to a second base station comprising (Abstract and Fig. 1): detecting a handover trigger event during the mobile unit's wireless communication via the first base station (C6 L33-45); transmitting an omnidirectional sounding pulse (inquiry message) from the mobile unit in response to a detected handover trigger the omnidirectional sounding pulse being detectable by the base station in order to establish wireless communication with the mobile unit (C6 L48-52); communicating information related to the detected sounding pulse to the interface by each base station detecting the sounding pulse (C6 L50-55); selecting the second base station from the base stations that detected the sounding pulse based on the communicated information (C8 L9-51);

Art Unit: 2617

and continuing the mobile unit's wireless communication via the selected second base station (C8 L49-51). However, Watanabe does not explicitly teach a plurality of base stations in the selection step and the transmitting step. However, it is known in the art of Bluetooth a mobile device often sends out an inquiry signal and receives responses back from multiple devices or access points and one of the device/access point/BS is selected for communication. In an analogous art, Jollota teaches that in response to the transmission of an inquiry signal (omnidirectional) from the mobile ([0021]), multiple BSUs communicate their Received\_MU commands to an interface PSC ([0022]). The PSC then compares these commands/responses and selects an optimal BSU ([0025], fig. 1 and 2). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine Watanabe's teaching of handoff and Jollota's teaching of selecting one among the many BS/BSUs that respond to the mobile's inquiry because this combination would allow the MS to have more choices in selecting the best BS to handover to.

2. Regarding claim **66**, **Watanabe** and **Jollota** further teach each mobile unit configured to transmit an omnidirectional sounding pulse to initiate handover from a serving base station to a handover base station (Watanabe, C6 L33-45).

3. Regarding claim 59, it is a system claim that correspond to that of claim 45. Therefore, it is rejected for the same reason as claim 45.

4. Regarding claim **67**, **Watanabe** and **Jollota** teach all the limitations of the method of claim **45**. **Watanabe** further teaches the mobile units are each configured to monitor the power level of a directed communication beam from a base station that is received by the mobile unit and to transmit an omnidirectional sounding pulse if the monitored power level falls below a predefined level (Watanabe, C6 L33-45).

Claims **52, 56, 69, 71, 72, 74, 83 and 85** rejected under 35 U.S.C. 103(a) as being unpatentable by **Watanabe** and **Jollota** in view of **Velazquez et al.** (US Patent No. 6,593,880).

5. Regarding **claim 52**, **Watanabe** and **Jollota** teach all the method of claim 48 but is silent about the UE having a selectively beamforming antenna and the step of determining a relative location of Node B and directs the beam toward the Node B to form a communication beam. In an analogous art, **Velazquez** teaches that the UE has a selectively beamforming antenna (col. 5, In 25-28) and the step of determining a relative location of the second Node B (col. 7 In. 55-60) with respect to the beamforming antenna of the mobile unit based on information related to the detected sounding pulse whereby the continuing of the UE's communication via the second Node B includes operating the mobile unit's antenna to form a communication beam toward the second Node B (Col. 6, In. 65 - Col. 7 In 15, Col. 8, In 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe and Jollota's** the handover method in the UMTS system and **Velazquez's** teaching of locating the UE and directing the beam toward the desired base station to reduce the system's interference as suggested by Velazquez (see Col. 5 In. 65- col. 7 In. 5).

6. Regarding **claim 56**, **Watanabe** and **Jollota** teach all the limitations of the method of claim **45**. but is silent that the mobile unit is equipped with a global positioning system (GPS) and the transmitting of an omnidirectional sounding pulse includes transmitting of mobile unit location information associated with the sounding pulse transmitted by the mobile unit and/or includes transmitting of identification information associated with the sounding pulse transmitted the mobile unit. In an analogous art, **Velazquez** teaches that the UE has a GPS (C8 L20-37). Therefore it would have been

Art Unit: 2617

obvious for one of ordinary skill in the art at the time of the invention for to add Valazquez's GPS to Watanabe and Jollota's handoff method to speed up the location positioning of the handset and thus to promote a faster handoff process.

7. Regarding claim **69**, it is an apparatus claim corresponding to the method claim number 56 previously addressed. Therefore, it is rejected for the same reasons as in claim 56.

8. Regarding claim **71**, **Watanabe** and **Jollota** teach a communication network for wireless communication comprising: a plurality of base stations (12, 14, 16, Fig. 1), each providing wireless communication services in a geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations; mobile units, each configured to transmit an omnidirectional sounding pulse during a wireless communication via a serving base station upon the occurrence of a handover trigger event to initiate handover to continue the communication via a handover base station and to select the handover base station based on reception of information communicated from base stations responding to the sounding pulse within a predefined time period from its transmitting of an omnidirectional sounding pulse; each base station configured to detect sounding pulses emitted from mobile units in order to establishment wireless communication with such mobile units; each base station configured to communicate information related to a detected sounding pulse from a mobile unit to the mobile unit; and each base station configured to direct a communication link when selected as the handover base station for a communicating mobile unit to continue the communicating mobile unit's wireless communication via the handover base station (see claim 1 rejection above).

Although, **Watanabe** and **Jollota** do not explicitly teach that the communication link is a beam.

**Velazquez** teaches a handoff method in which the base station uses beamforming for communication link (Col. 6, ln. 65 - Col. 7 ln 15, Col. 8, ln 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe** and

Art Unit: 2617

**Jollota's** teaching of the handover method in the UMTS system and **Velazquez's** teaching of using beam forming to reduce the system's interference as suggested by **Velazquez** (see Col. 5 In. 65- col. 7 Ln5).

9. Regarding claim **72**, it is a combination of limitations of claim 52 and 59. Therefore, claim 72 is rejected for the same subset of reasons as claims 52 and 59.

10. Regarding claim **74**, **Watanabe** and **Jollota** teaches a radio network having a plurality of base stations (12, 14, 16, Fig. 1), each providing wireless communication services in a respective geographic coverage area that may or may not overlap with the geographic coverage areas of other of the base stations, a method for handoff of a wireless communication conducted by a communicating mobile unit via a serving base station to a handover base station comprising (C27 and Abstract and Fig. 1 and 8): transmitting an omnidirectional sounding pulse from the communicating mobile unit during the wireless communication upon the occurrence of a triggering event (block 216, Fig. 8, C27 L20-24); directing a communication signal from base stations detecting the sounding pulse towards the mobile unit (C27 L24-29); selecting a handover base station from the base stations that detected the sounding pulse based on the communication signal received by the mobile unit (C27 L24-29); and continuing the wireless communication via the selected handover base station (C27 L40-48). Although, **Watanabe** and **Jollota** do not explicitly teach that the communication signal is in a form of a beam.

**Velazquez** teaches a handoff method in which the base station uses beamforming for communication link (Col. 6, In. 65 - Col. 7 In 15, Col. 8, In 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe** and **Jollota's** teaching of the handover method in the UMTS system and **Velazquez's** teaching of using beam forming to reduce the system's interference as suggested by **Velazquez** (see Col. 5 In. 65- col. 7 In. 5).

Art Unit: 2617

11. Regarding claim **83**, **Watanabe**, **Jollota** and **Velazquez** teach the mobile station that is used in the handoff method of claim 74. Therefore, it is rejected for the same reasons as claim 74. **Watanabe** further teaches a mobile unit has an inherent transmitter configured to transmit an omnidirectional (antenna, Fig. 2) sounding pulse and an inherent receiver (46, Fig. 2) configured to receive communication beams from base stations; and an inherent processor configured to select a handover base station (46, Fig. 2) via which the mobile unit is to continue the wireless communication based on communication beams received by the mobile unit from base stations that detected the pulse transmitted by the mobile unit (see claim 74 above).

12. Regarding claim **85**, it claims a mobile unit, which corresponds to the method claim 56 previously addressed. Therefore, it is rejected for the same reasons as in previous claim 56.

13. Claims **86** rejected under 35 U.S.C. 103(a) as being unpatentable by **Watanabe** and **Jollota** in view of **Velazquez et al.** (US Patent No. 6,593,880) in view of **Anderson et al.** (US Patent No. 5396541).

14. Regarding claim **86**, **Blakeney** and **Velazquez** teach all the limitations of the method of claim 83 but does not teaches a mobile ID. In an analogous art, **Anderson** further teaches that the mobile unit is configured to transmit an omnidirectional sounding pulse that includes mobile unit identification information (the mobile responds to a poll message with its identification, Col. 12, lines 52-58). Therefore, one skill in the art would combine **Blakeney** and **Velazquez's** teaching of handoff with **Anderson's** teaching of the mobile identification to make it easier to identify where the signal is coming from and thus facilitate the handoff process.



15. **Claims 57-58, 68, 73, 84, 87** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe and Jollota** in view of **Anderson et al.** (US Patent No. 5396541).

16. Regarding claim 57, **Watanabe and Jollota** teach all the limitations of the method of claim 45. Blakeney does not explicitly teach that the transmitting of an omnidirectional sounding pulse includes transmitting a subsequent sounding pulse of increased power by the mobile unit if handover does not occur within a predefined time period from its transmitting of an omnidirectional sounding pulse. However, Anderson teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 50-15). In addition, it is also well known in the field of communications that after a failed transmission, one of ordinary skill in the art may use back-off algorithm to resend the signal in a predefined period of time. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine **Watanabe and Jollota's** handoff method and **Anderson's** teaching of a increasing the signal power (if the mobile is far away from the base station) at a predefined period to increase the chance of a successful handoff.

17. Regarding claim 58, **Watanabe and Jollota** teaches all the limitations of the method of claim 45. they fails to expressly teach that the transmitting of an omnidirectional sounding pulse includes transmitting a series of omnidirectional sounding pulses of increasing power from the mobile unit. However, Anderson teaches a method of adjusting the power to a higher or lower level if the mobile is far or close from the base stations respectively (Col. 9, lines 50-15). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine **Watanabe and Jollota's** handoff method and **Anderson's** teaching of

Art Unit: 2617

retransmitting the signal with increasing power (assuming the mobile is far away from the base station) to increase the chance of a successful handoff.

18. Regarding claim **68**, it is an apparatus claim corresponding to the method claim number 13 previously addressed. Therefore, it is rejected for the same reasons as in claim 57.

19. Regarding claim **73 and 84**, they are corresponding to the method claim number 57 previously addressed. Therefore, it is rejected for the same reasons as in claim 57.

20. Regarding claim **87**, it claims a mobile unit, which corresponds to the method claim 57 previously addressed. Therefore, it is rejected for the same reasons as in previous claim 57.

21. Claim **46, 47, 53-55, 60-61, 64-65, 70, 74, 75 and 88** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe and Jollota** in view of **Keskitalo** (US Patent No. 5893033).

22. Regarding claim **46, Watanabe and Jollota** teaches all the limitations of the method of claim **45** but is not explicit that each base station has a selectively operable beamforming antenna that can determine the location of the mobile and steer the channels toward the mobile's location. In an analogous art, **Keskitalo** teaches that each base station has a selectively operable beamforming antenna, and further comprising: determining a relative location of the mobile unit with respect to the beamforming antennas of base stations neighboring the first base station (Col. 9, lines 41-45) and directing beacon channels of the neighboring base stations toward the mobile unit location to receive the transmitted sounding pulse (Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining

Art Unit: 2617

the mobile's location and direct the channels toward the mobile's location to have a better signal quality.

23. Regarding **claim 47**, **Watanabe and Jollota** teaches all the limitations of the method of **claim 45** but is not explicit that each base station has a selectively operable beamforming antenna that can determine the location of the mobile and sweep beacon channels over an arc. In an analogous art, **Keskitalo** teaches a step of determining a relative location of the mobile unit with respect to the beamforming antennas of base stations neighboring the first base station (Col. 9, lines 41-45) and commanding the neighboring base stations to sweep beacon channels over an arc encompassing the mobile unit location to receive the transmitted sounding pulse (Col. 9, lines 48-49 and Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining the mobile's location and sweep the channels over an arc to search for the best signal components as taught by **Keskitalo** (Col. 9, 14-16).

24. Regarding **claim 53**, it is a combination of claims 45 and 47. Therefore, it is rejected for the same reasons as claims 45 and 47.

25. Regarding **claim 54**, **Watanabe and Jollota** teaches all the limitations of the method of **claim 45** but is not explicit that Node B is configured to operate its antenna to form a communication beam that carries common channels that encompasses the relative location of a plurality of UEs so that the formed beam provides common channel service to a plurality of UEs. Nonetheless, it is a practical design system to service a plurality of UEs rather than a single one to increase capacity of the system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to service multiple UEs to maximize system capacity.

Art Unit: 2617

26. Regarding claim **55**, **Watanabe and Jollota** teaches all the limitations of the method of claim **45** but is not explicit that the mobile unit has a selectively operable beamforming antenna and transmitting an omnidirectional sounding pulse from the mobile unit is performed by transmitting multiple sounding pulses that sweep through 360 degrees or a set of calculated arcs. In an analogous art, **Keskitalo** teaches that a sweep of an antenna beam over a given area (Col. 9, lines 48-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining the mobile's location and sweep the channels over an arc to search for the best signal components as taught by Keskitalo (Col. 9, 14-16).

27. Regarding **claims 60 and 61**, they are apparatus claims corresponding to the method claims number 45 and 47 respectively. Therefore, they are rejected for the same reasons as claim 45 and 47.

28. Regarding claim **64**, **Watanabe and Jollota** teaches all the limitations of the method of claim **45** but is not explicit that Node B is configured to operate its antenna to form a communication beam that carries common channels that encompasses the relative location of a plurality of UEs so that the formed beam provides common channel service to a plurality of UEs. Nonetheless, it is a practical design system to service a plurality of UEs rather than a single one to increase capacity of the system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to service multiple UEs to maximize system capacity.

29. Regarding **claim 65**, it is an apparatus claim corresponding to the method claim number 45. Therefore, it is rejected for the same reasons as claim 45.

30. Regarding claim **70**, it is an apparatus claim corresponding to the method claim number 55. Therefore, it is rejected for the same reasons as claim 55.

31. Regarding claim **74**, it is an apparatus claim corresponding to the combined method claims number 45 and 46. Therefore, it is rejected for the same set of reasons as claim 45 and 46.

32. Regarding claim **75**, it is an apparatus claim corresponding to another variation of the combined method claims 45 and 46. Therefore, it is rejected for the same set of reasons as claim 45 and 46.

33. Regarding claim **88** it claims a mobile unit, which corresponds to the method claim 55 previously addressed. Therefore, it is rejected for the same reasons as claim 55.

34. Claim **48, 62** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe and Jollota** in view of **Bark et al.** (US Patent No. 6445917).

35. Regarding claim **48**, **Watanabe and Jollota** teaches all the limitations of the method of claim **45** but is not explicit that the radio network is a UMTS Terrestrial Radio Access Network (UTRAN), each base station is a Node B, the interface is a Radio Network Controller (RNC) and the mobile unit is a mobile User Equipment (UE); In an analogous art, **Bark** teaches a UMTS Terrestrial Radio Access Network (UTRAN) (**24**, see Figure 1A), each base station is a Node B (**28**), the interface is a Radio Network Controller (RNC) **26** and the mobile unit is a mobile User Equipment (3G terminology); the communicating information is between Node Bs and the RNC via an lub or combination lub/lur interface (Col. 5, lines 44-45, and 3G standards); the second base station selection is performed by the RNC by selecting a second Node B (col. 8, lines 50-55); and the UE's communication continued via the second Node B is via a Uu interface (inherent). UMTS is a system used in the 3G which is gaining increasing popularity. Therefore, it

would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to also establish this handover method in the UMTS system to keep the network system up-to-date with the current technology.

36. Regarding claim **62**, it is an apparatus claim corresponding to the method claim number 48. Therefore, it is rejected for the same reasons as claim 48.

37. Claims **49, 50, 63, 76, 78-82** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe and Jollota** and **Bark et al.** (US Patent No. 6445917) in view of **Keskitalo** (US Patent No. 5893033).

38. Regarding claim **49**, **Watanabe and Jollota** teaches all the limitations of the method of claim 48. However, they fail to teach that each Node B has a selectively operable beamforming antenna, further comprising: determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and directing beacon channels of the neighboring Node Bs toward the UE location to receive the transmitted sounding pulse. In an analogous art, **Keskitalo** teaches a step of determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and directing beacon channels of the neighboring Node Bs toward the UE location to receive the transmitted sounding pulse (Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to include the step of determining the mobile's location and direct the channels toward the mobile's location to have a better signal quality.

39. Regarding claim **50**, **Watanabe and Jollota** teaches all the limitations of the method of claim 48. However, they fail to teach that each Node B has a selectively operable beamforming antenna, further comprising: determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and commanding the neighboring Node Bs to sweep beacon channels over an arc encompassing the mobile unit location to receive the transmitted sounding pulse. In an analogous art, **Keskitalo** teaches a that each Node B has a selectively operable beamforming antenna, further comprising: determining a relative location of the UE unit with respect to the beamforming antennas of Node Bs neighboring the first Node B and commanding the neighboring Node Bs to sweep beacon channels over an arc encompassing the mobile unit location to receive the transmitted sounding pulse (Col. 9, lines 48-49 and Col. 9, lines 63-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the handover method to sweep the channels over an arc to search for the best signal components (Keskitalo, Col. 9, lines 14-16) in the 3G environment to make the network more interface-able with other networks.

40. Regarding claim **63**, it is an apparatus claim corresponding to the method claim number 49. Therefore, it is rejected for the same reasons as claim 49.

41. Regarding claim **76**, it is a combination of method claims 45, 46, and 48. Therefore, it is rejected for the same set of reasons as claim 45, 46 and 48.

42. Regarding claim **78**, it is a combination of method claims 45 and 46. Therefore, it is rejected for the same set of reasons as claim 45 and 46 (See claims 45 and 46).

43. Regarding claim **80, 81 and 82**, they are method claims that correspond to previous method claims of 55-57. Therefore, they are rejected for the same of reasons as claim 55-57.

44. Claim **51-52, 77** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Watanabe and Jollota** in view of **Bark et al.** (US Patent No. 6,445,917) further in view of **Velazquez et al.** (US Patent No. 6,593,880).

45. Regarding claim **51, Watanabe , Jollota and Bark** teach all the limitations of the method of claim **48**. However, the combination fails to specifically teach the step of determining a relative location of the UE and directs the beam toward the UE to encompass the UE's relative location. In an analogous art, **Velazquez** teaches a step of determining a relative location of the UE with respect to the beamforming antenna of the selected second Node B based on information related to the detected sounding pulse whereby the continuing of the UE's communication via the second Node B includes operating the selected Node B's antenna to form a communication beam for at least one dedicated channel covering a selected portion of the coverage area serviced by the second Node B that encompasses the determined relative location of the UE (Col. 7, In 25-68, Col. 8, In 25-40 ). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe , Jollota and Bark's** teaching of the handover method in the UMTS system and **Velazquez's** teaching of locating the UE and directing the beam toward the UE to reduce the system's interference.



Art Unit: 2617

46. Regarding **claim 52, Watanabe, Jollota and Bark** teach all method of claim 48.

The combination also fails to specifically teach that the UE has a selectively beamforming antenna and the step of determining a relative location of Node B and directs the beam toward the Node B to form a communication beam. In analogous art, **Velazquez** teaches that the UE has a selectively beamforming antenna (col. 5, ln 25-28) and the step of determining a relative location of the second Node B (col. 7 ln. 55-60) with respect to the beamforming antenna of the mobile unit based on information related to the detected sounding pulse whereby the continuing of the UE's communication via the second Node B includes operating the mobile unit's antenna to form a communication beam toward the second Node B (Col. 6, ln. 65 - Col. 7 ln 15, Col. 8, ln 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe , Jollota and Bark's** teaching of the handover method in the UMTS system and Velazquez's teaching of locating the UE and directing the beam toward the desired base station to reduce the system's interference as suggested by Velazquez (see Col. 5 ln. 65- col. 7 ln. 5).

47. Regarding claim **77, Watanabe , Jollota and Bark** teach all the limitations of a network of claim 76. However, The combination also fails to specifically teach the step of determining a relative location of the UE and directs the beam toward the UE to encompass the UE's relative location. In an analogous art, Velazquez teaches a determining a relative location of the UE with respect to the beamforming antenna of each sounding pulse detecting Node B based on information related to the detected

Art Unit: 2617

sounding pulse whereby the directing of a communication beam includes operating the respective Node Bs' antennas to form communication beams that each cover a selected portion of the coverage area serviced by the respective Node B that encompasses the relative location of the UE (Col. 7, ln 25-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply **Watanabe, Jollota and Bark's** teaching of the handover method in the UMTS system and Velazquez's teaching of locating the UE and directing the beam toward the UE to reduce the system's interference.

### ***Response to Arguments***

Applicant's arguments with respect to claims 45-88 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2617


### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Lam whose telephone number is (571) 272-6497. The examiner can normally be reached on M - F 9 - 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is (571) 272-6497.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DL

  
LESTER G. KINCAID  
SUPERVISOR, ART UNIT 2617